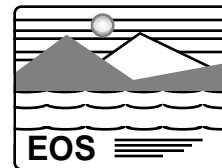




EOS AM-1 Mission Operations Review

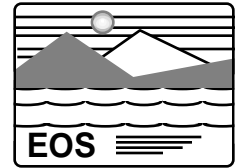


NETWORKS SUPPORT

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Space Network Baseline Support

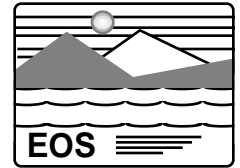


Communication between S/C-to-Ground is primarily via the SN/TDRSS.

- **Two 12-minute TDRS contacts per orbit**
- **Return link**
 - **K-band single access antenna (science @ 150 Mbps)**
 - **S-band single access antenna (real-time [RT] HK @ 16 kbps, PB @ 256 kbps)**
 - **S-band multiple access (16 kbps RT)**
 - **S-band 1 kbps contingency**



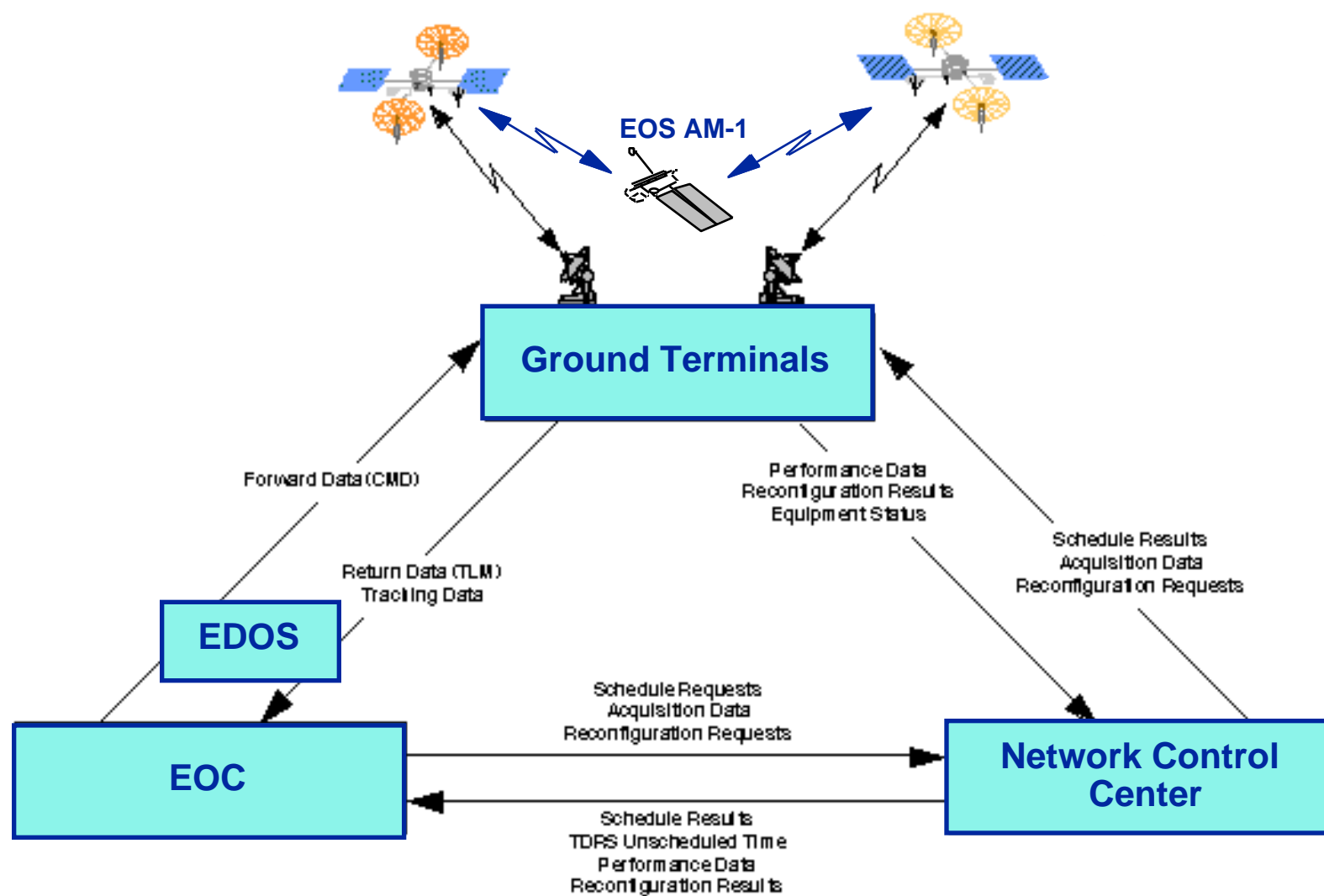
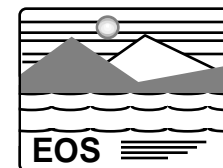
Space Network Baseline Support (Cont'd)



- **Forward link**
 - **S-band 10 kbps uplink loads**
 - **S-band 1 kbps low-rate commands**
 - **S-band 0.125 kbps backup command**
- **Tracking services (S-band)**
 - **Range and Doppler for orbit determination**
 - **TONS initial and ongoing performance verification**

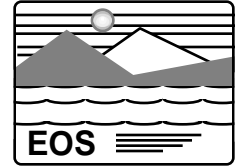


Space Network Data Flow





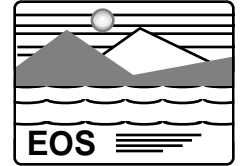
SN – EOC Interface



- **EOC submits requests during forecast period (14 to 21 days in advance)**
- **NCC produces and distributes schedule**
- **EOC requests additional contacts, as needed**



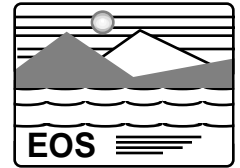
SN Support for AM-1



- **AM-1 Integration Testing begins May '97**
 - **NCC Transmission Control Protocol (TCP) version includes mods for EOSDIS support**
- **AM-1 Launch Support**
 - **NCC98 version will be operational April 98**
 - **NCC98 is backward compatible with NCC TCP and does not require EOSDIS software change**
- **Postlaunch**
 - **ESDIS has the option to enhance FOS S/W to take advantage of full NCC 98 capabilities**



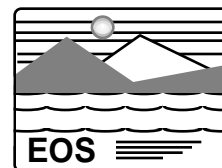
AM-1 S-band Contingency Station



- **DSN & GN contingency/emergency support requirements are being deleted**
- **Greater coverage is available via:**
 - **Two AM-1 Back-up Ground Stations (Alaska Gilmore Creek & Norway Svalbard)**
 - **Wallops Orbital Tracking Station (WOTS)**



AM-1 Back-up Ground Stations

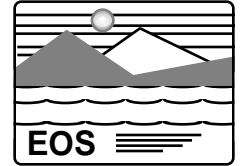


In case of failure of the on-board high rate system (e.g., HGA), the AM-1 Back-up Ground Stations will be used.

- **X-band**
 - Two high-latitude stations will capture X-band science data at 150 Mbps.
 - Data will be recorded on magnetic tapes.
 - Tapes will be shipped from the Back-up Ground Stations to EDOS at GSFC.
- **S-band capability will be available.**
 - 2 kbps command
 - 16 kbps real-time telemetry
 - 512 kbps telemetry dump
- **Operational testing will begin after November 1997.**



AM-1 Back-up Ground Stations Site Location

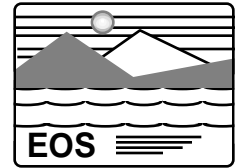


Back-up Ground Stations being implemented by Wallops:

- **Alaska (Gilmore Creek)**
 - **Latitude:** 64 degrees 58 minutes North
 - **Longitude:** 212 degrees 28 minutes East
 - **Elevation:** 340.7 meters
- **Norway (Svalbard)**
 - **Latitude:** 78 degrees 13 minutes North
 - **Longitude:** 15 degrees 27 minutes East
 - **Elevation:** 450 meters



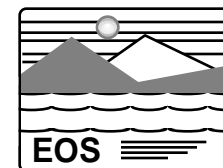
AM-1 Back-up Ground Stations System Activities



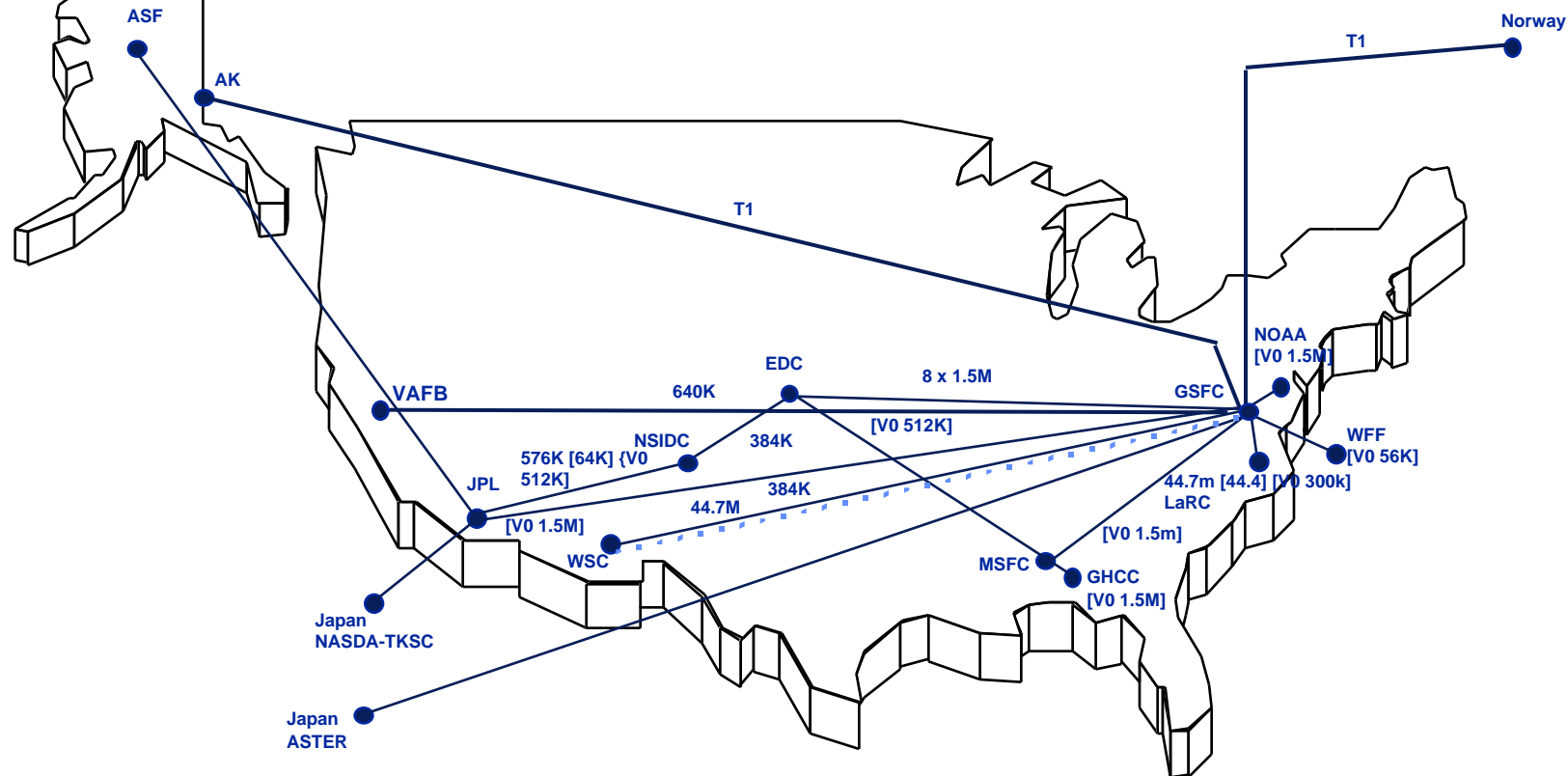
- **Norway**
 - **AM-1 11-Meter Antenna System Design Review held November 6, 1996 at Wallops**
 - **Norwegian Space Center Operations and Maintenance contract to be awarded by December 15, 1996**
- **Alaska**
 - **Formal site selection on October 15, 1996**
 - **Factory acceptance test of antenna system in April 1997**



EBnet Wide Area Topology

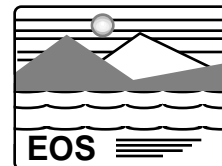


EBnet consists of a single, consolidated, router-based network. It provides connectivity among EOSDIS elements.





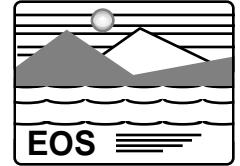
EBnet Status



- **AM-1 major EBnet design review held May 9, 1996**
- **AM-1 testing and operational support, January 1997
(EOC and Valley Forge connectivity is operational)**



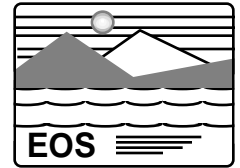
DMR Compliance



- **The DMR has been submitted for CCB approval. This version incorporates the recent decision to include an S-band requirement for the Back-up Ground Stations and deletes DSN and GN contingency requirement.**
- **All other DMR requirements have been accepted.**



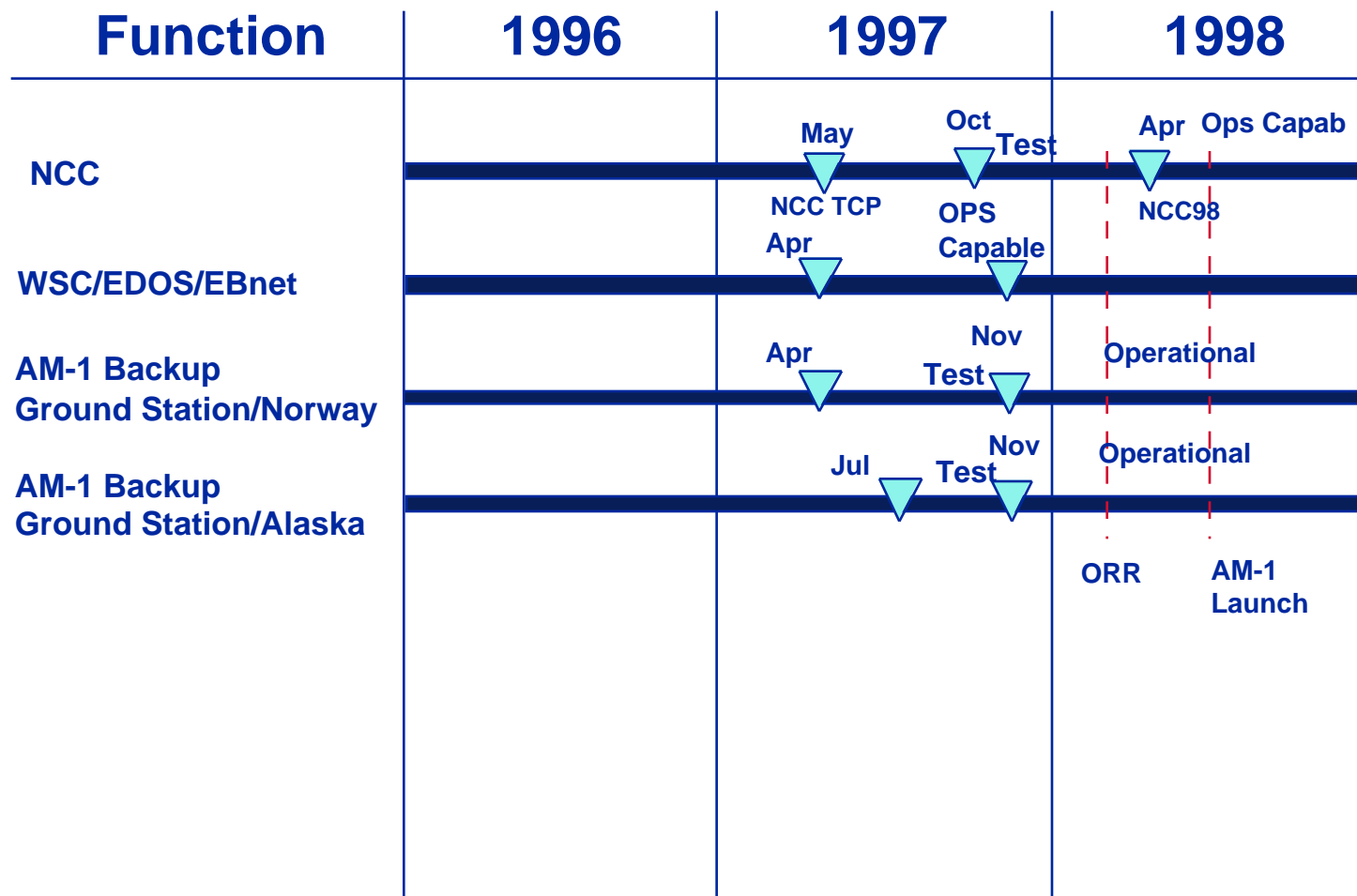
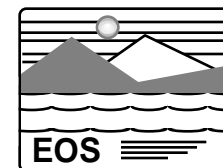
Networks Issues and Concerns

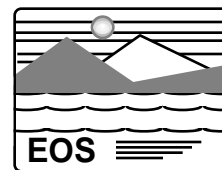


No issues or concerns affecting launch operations.



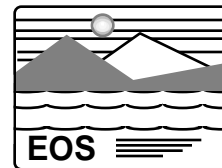
Networks Infrastructure Schedule







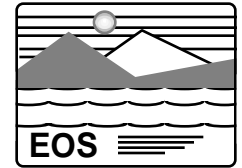
EOS AM-1 Mission Operations Review



BACKUP SLIDE



Backup Ground Stations Backup Chart



- X-band implementation proceeding – 11/97
- Landsat 7 (S-band forward link) proceeding – 11/97
- § For both: Formal Status Review – 12/96 §
- AM-1 Emergency Backup
 - Levels 1 & 2 Requirements changes in progress
 - AM-1 DMR updated to reflect changed requirements (AM-1 DMR in signature cycle)
- Total Project Plan – 12/15/96